

Claims

We Claim:

1. Bio-compatible means for delivery of at least one pharmaceutically active agent to a patient in need of same comprising:

- a) a bio-compatible, biodegradable anionic or cationic carrier,
- b) at least one pharmaceutically active agent wherein said agent is cationic when the carrier is anionic and is anionic when the carrier is cationic,
- c) at least one bio-compatible enclosing means having at least one outwardly directed surface having a predetermined permeation gradient for the passage therethrough of said at least one pharmaceutically active agent, said active agent being ionically linked to said carrier, thereby forming a carrier/active agent combination, said carrier/active agent combination being enclosed in said enclosing means.

2. The bio-compatible means for delivery of at least one pharmaceutically active agent to a patient in need of same comprising:

- a) a bio-compatible, biodegradable anionic or cationic carrier,
- b) at least one pharmaceutically active agent wherein said agent is cationic when the carrier is anionic and is anionic when the carrier is cationic,
- c) at least one bio-compatible, biodegradable enclosing means having at least one outwardly directed side, said active agent being ionically linked to said carrier, thereby forming a carrier/active agent combination, said carrier/active agent combination being enclosed in said enclosing means.

3. The bio-compatible means for delivery of claim 2, wherein said at least one bio-compatible, biodegradable enclosing means has a predetermined permeation gradient for the passage therethrough of said at least one pharmaceutically active agent.

4. The bio-compatible means in accordance with claim 1, wherein the carrier is an anionic carrier.

5. The bio-compatible means in accordance with claim 1, wherein the active agent is a cationic agent.

6. The bio-compatible means in accordance with claim 5, wherein the active agent is a selected from the group consisting of cationic analgesics, antibiotics, antimicrobials, antivirals, antiinflammatory agents and hemostatic agents.

7. The bio-compatible means in accordance with claim 4, wherein the anionic carrier an oxidized regenerated cellulose carrier.

8. The bio-compatible means in accordance with claim 7, wherein the anionic carrier is an oxidized regenerated cellulose fabric.

9. The bio-compatible means in accordance with claim 8, wherein the active agent is a cationic agent.

10. The bio-compatible means in accordance with claim 9, wherein the active agent is a selected from the group consisting of cationic analgesics, antibiotics, antimicrobials, antivirals, anti-inflammatory agents anticholinergics, antidepressants, antihistamines, antidiabetics, anticonvulsants, antimigranes, antineoplastics, antimalerials, immunisuppressants, cardiovascular drugs, growth factors and hemostatic agents.

11. The bio-compatible means in accordance with claim 1, wherein the enclosing means is a polymer film.

12. The bio-compatible means in accordance with claim 11, wherein said polymer is a microporous polymer of has a pore size of between 0.01 and 1000 microns.

13. The bio-compatible means in accordance with claim 12, wherein said microporous polymer has a pore size of between 0.1 and 500 microns.

14. The bio-compatible means in accordance with claim 13, wherein said
5 microporous polymer has a pore size of between 0.1 and 50 microns.

15. The bio-compatible means in accordance with claim 14, wherein said microporous polymer has a pore size of between 0.1 and 5 microns.

10 16. The bio-compatible means in accordance with claim 15, wherein said microporous polymer has a pore size of between 0.1 and 1 microns.

17. The bio-compatible means in accordance with claim 1, wherein the enclosing means is a polymer film selected from the group consisting of PLA, PLG, mixtures thereof and copolymers of the constituent monomers thereof.
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18. The bio-compatible means in accordance with claim 2, wherein the carrier is an anionic carrier.

20 19. The bio-compatible means in accordance with claim 18, wherein the active agent is a cationic agent.

20. The bio-compatible means in accordance with claim 19, wherein the active agent is a selected from the group consisting of cationic analgesics, antibiotics, antimicrobials, antivirals, anti-inflammatory agents
25 anticholinergics, antidepressants, antihistamines, antidiabetics, anticonvulsants, antimigranes, antineoplastics, antimalerials, immunisuppressants, cardiovascular drugs, growth factors and hemostatic agents.

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21. The bio-compatible means in accordance with claim 20, wherein the anionic carrier an oxidized regenerated cellulose carrier.

22. The bio-compatible means in accordance with claim 21, wherein the anionic carrier is an oxidized regenerated cellulose fabric.

5 23. The bio-compatible means in accordance with claim 22, wherein the active agent is a selected from the group consisting of cationic analgesics, antibiotics, antimicrobials, antivirals, antiinflammatory agents and hemostatic agents.

10 24. The bio-compatible means in accordance with claim 2, wherein the enclosing means is a polymer selected from the group consisting of PLA, PLG mixtures thereof and copolymers of the constituent monomers thereof.

15 25. The bio-compatible means in accordance with claim 10, wherein the enclosing means is a polymer selected from the group consisting of polyethylene, polypropylene mixtures thereof and copolymers of the constituent monomers thereof.

20 26. The bio-compatible means in accordance with claim 25, wherein the enclosing means is a microporous polymer film.

27. The bio-compatible means in accordance with claim 3, wherein the enclosing means is a microporous polymer film.

25 28. The bio-compatible means in accordance with claim 27, wherein the carrier is an anionic carrier.

29. The bio-compatible means in accordance with claim 28, wherein the active agent is a cationic agent.

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30. The bio-compatible means in accordance with claim 29, wherein the active agent is a selected from the group consisting of cationic analgesics, antibiotics, antimicrobials, antivirals, antiinflammatory agents anticholinergics,

antidepressants, antihistamines, antidiabetics, anticonvulsants, antimigranes, antineoplastics, antimalerials, immunisuppressants, cardiovascular drugs and hemostatic agents.

5 31. The bio-compatible means in accordance with claim 28, wherein the anionic carrier is an oxidized regenerated cellulose carrier.

32. The bio-compatible means in accordance with claim 31, wherein the anionic carrier is an oxidized regenerated cellulose fabric.

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33 The bio-compatible means in accordance with claim 32, wherein the active agent is a cationic agent.

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34. The bio-compatible means in accordance with claim 27, wherein said microporous polymer has a pore size of between 0.01 and 1000 microns.

35. The bio-compatible means in accordance with claim 34, wherein said microporous polymer has a pore size of between 0.1 and 500 microns.

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36. The bio-compatible means in accordance with claim 35, wherein said microporous polymer has a pore size of between 0.1 and 50 microns.

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37. The bio-compatible means in accordance with claim 36, wherein wherein said microporous polymer has a pore size of between 0.1 and 5 microns.

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38. The bio-compatible means in accordance with claim 37, wherein wherein said microporous polymer has a pore size of between 0.1 and 1 microns.

39. The bio-compatible means in accordance with claim 3, wherein the enclosing means is a polymer selected from the group consisting of PLA, PLG mixtures thereof and copolymers of the constituent monomers thereof.

40. The bio-compatible means in accordance with claim 1, additionally comprising at least one further carrier layer located on at least one outwardly facing surface of said enclosing means.

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41. The bio-compatible means in accordance with claim 2, additionally comprising at least one further carrier layer located on at least one outwardly facing surface of said enclosing means.

10 42. The bio-compatible means in accordance with claim 3, additionally comprising at least one further carrier layer located on at least one outwardly facing surface of said enclosing means.

15 43. A method of administering at least one pharmaceutically active agent to the tissue surface of a subject in need of same at a rate dependent on the permeability of the enclosing means of claim 1, comprising the step of contacting said tissue surface with the bio-compatible delivery means of claim 1.

20 44. A method of administering at least one pharmaceutically active agent to the tissue surface of a subject in need of same, at a rate dependent on the rate of bio-degradability of the enclosing means of claim 2, comprising of step of contacting said tissue surface with the bio-compatible delivery means of claim 2.

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45. A method of administering at least one pharmaceutically active agent to the tissue surface of a subject in need of same, at a rate dependent on the rate of bio-degradability and permeability of the enclosing means of claim 3, comprising the step of contacting said tissue surface with the bio-compatible
30 delivery means of claim 3.

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